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[No. 10.]

Some Notes on Characeæ.

By T. F. ALLEN, M.D.

Plates LXXI-LXXV.

A NEW NITELLA FROM THE FEEJEE ISLANDS.—(PLATE LXXI.)

NITELLA MUTHNATÆ, *n. sp.*—Diarthrodactyla, homœophylla, monoica, sub-flabellata, (sub-species *N. mucronata*, A. Br., sensu latissimo) Tenuis. Caulis ad 15 cm. longus, 0.475 mm. crassus. Verticilli remoti diffformes; inferiores steriles diffusi; superiores fertiles, brachyphylli, globoso-contracti, 6 foliis. Folia plerumque duplicato-divisa, segmentis primis ad 1.0-1.20 longis, divisionis primis sterilibus; segmentis secundis ad 0.575-0.800 longis, 0.135-0.175 crassis, *divisuris secundis fertilibus*; segmentis ultimis ad 0.425-0.500 longis, 0.100 crassis, bicellularibus, *apice non-attenuatis*, cellula secunda mucronem angustum et elongatum formante terminatis, (mucrone ad 0.080-0.100 longo). Sporangia in *divisuris secundis, solitaria*, coronula brevi, nucleo ovali, fusco, striis non prominulis, 5-gyrato, 0.265-0.285 longo.

This species is represented by but one specimen in the herbarium of Columbia College, New York, from Muthnata Island (one of the Feejee group), collected by the Wilkes Exploring Expedition, 1838-'42, and distributed by the Smithsonian Institution. The inferior verticils are spreading and sterile, but the fertile verticils are contracted and remote, almost moniliform in a kind of spike. The fertile portion of the plant is closely similar to *N. tenuissima*.

The leaves are never more than twice divided, which might bring the plant under the *sub-flabellatæ* section of the *mucronata* group. In this case its relations would be rather with *N. brachyteles*, A. Br., from which it would differ by its solitary sporangia, which are never aggregated, and by other marks.

A NEW SPECIES OF TOLYPELLA.—(PLATE LXXII–LXXIII.)

TOLYPELLA MACOUNII, n. sp.—Plant 2 to 4 inches high, much branched, dense. Sterile leaves numerous; fertile heads few and very small.

Verticils of the stem consist usually of four branches bearing fertile heads and eight sterile leaves; four of these sterile leaves are usually divided into four leaflets, of which all are simple terminals two-celled; or two are again divided into two or three terminal leaflets, and when so divided the terminals are usually one-celled (Fig. C); four other sterile leaves are usually undivided, some very long, two-celled (Fig. B); others quite short and three-celled; or now and then one is short, and divided into three short terminals. The sterile leaves, which are fully developed and bear nodes and leaflets, attain a length of 15 to 20 mm.; the first segment shortest—4-5 mm.; the second, if undivided, 8-10 mm.; if divided, first part, 5-6 mm.; terminals, 6-7 mm. The diameter of the first segment is 190 μ .

The pedicel bearing the fertile head (Fig. D) is about 1.25 mm. long and 1.65 in diam. The “fertile” heads sometimes develop no fruit, but become quite “leafy”; in this case the leaves are longer and measure as follows: first division, 145 μ . diam., divides into four leaflets, one of these (the dorsal) extends longer than the others and is simply two-celled, bearing no node; the three lateral leaflets again subdivide into three one-celled terminals. The terminals are about 120 μ . in diam., *and are not attenuate*, but end in a very short, abrupt point. See A, in plate LXII: 1, the pedicel of the “fertile” verticils, one of these is drawn out, having developed sterile; 2, second segment; 3, third segment; 4, terminal; 5, a terminal magnified 55 diam.; 6, the dorsal two-celled leaflet of a perfectly developed leaf, with three laterals from its node (7), each divided into three one-celled terminals; C., sterile leaves variously divided.

When the leaves are fertile, fruit is borne on the primary node of the leaf, and also on the nodes of the lateral rays; commonly three sporophydia at each node; *fruit is very rarely seen in the fundus of the fertile verticil*. Fig. D represents a fertile leaf with only a few fruit: 1, the first division of the leaf continued at 1a into the two-celled, undivided dorsal ray; 2, the

second divisions or lateral rays; *2a*, the one-celled terminals of these rays, usually, in the fertile verticils, two in number, *and always one-celled*. E, a single lateral ray, with one antheridium and three sporophydia.

Sporophydia (Fig. F) clustered on the nodes of the leaves and lateral rays, and more rarely in the fundus of the verticil, not stipitate. Coronula persistent, and nucleus smooth, with 5-6 striæ, 210-215 μ . long, 200-210 broad; antheridia 130 μ . in diameter.

Collected in "August, 1882, in a pool on the shore of Niagara River, above the Falls," by Prof. Macoun. The description of this species has been delayed in the hope of obtaining more specimens (two only were gathered), but visits to the locality have been unsuccessful; but the species will doubtless be re-discovered.

This is one of the most remarkable *Tolypellæ* that has yet been described, from the fact that the terminal cells of the fruiting rays are one-celled. No other species has such simple terminals; no species has so little fruit and such imperfectly formed nests. It is nitella-like in its habit of growth, slightly incrusting, and altogether unique.

CHARA SUCCINCTA, A. BR. (or a closely allied species.)—
(PLATE LXXIV.)

A fragment of *Chara* collected in the island Mauritius and communicated by Miss F. E. Hitchcock, presents points of great interest in the following respects:

It is wholly devoid of cortex, and is perfectly free of incrustation. The stems are long and slender, perfectly diaphanous, 0.400 mm. in diameter.

Verticils distant, with very short incurved leaves.

Stipules *opposite* the leaves very short or obsolete.

Leaves with three nodes: the first segment 0.830 long, the second 0.700, the third 1.070 (average of several measurements); the terminal segment single, large, not mucroform. Bracts verticillate, generally very short posteriorly; anterior bracts as long as diam. of antheridium. Sporophydia (Sporangia) numerous in the fundus of the verticil (generally one opposite each

leaf), on quite long (0.310 mm.) pedicels; whole length of sporophyidium (except its pedicel), 0.835 (-900); length of coronula, 0.120. Coronula of roundish cells not elongated. Nucleus, when mature, smooth, black, with 9-10 faint striæ, and with two sharp points at the base, 0.620-0.645 long, 0.310-0.330 broad. When immature, the angles are strong and winged.

On one verticil two small abortive antheridia were seen on the outside, occupying the place of stipules, opposite the leaves. No sporophydia occur in this position, but sometimes the long-stalked sporophydia turn down between the leaves and appear to be situated externally.

Antheridia on the first node of the leaf, separated from the sporophydia, 400 μ . in diameter; rarely situated on the outside of the verticil.

This form differs in some respects from the description of the one from the rice-fields in an oasis of the Libyan desert. That species grew in salty water, had spreading leaves, and the aspect of a "*Ch. aspera* or a moderate *Ch. contraria*," but the size of the fruit and the other peculiarities lead me to unite this form with that species.

Fig. 1—A mature verticil, with minute opposite stipules and pedicellate sporophydia within the verticil of leaves. Fig. 2—A mature nucleus. Fig. 3—Small abortive antheridia outside the verticil. Fig. 4—A young verticil, with immature sporophydia, with a mature antheridium on the first node of the leaf.

All figures magnified 40 diameters.

A NEW NITELLA FROM NANTUCKET.—(PLATE LXXV.)

NITELLA MORONGII, n. sp. Diarthrodactyla, homœophylla, monoica, macrodactyla, sub-flabellata.

Plant 5-6 inches high; lower leaves sterile, elongated, once or twice divided, mucronate; upper leaves contracted, forming with their stems fertile spikes; fertile verticils numerous, crowded in terminal and axillary spikes about half an inch long; leaves of fertile verticils short, twice divided in the lower, once divided in the upper verticils. Leaves in a verticil, six; first division about 240 μ . long, 95 in diameter; terminals, usually four, or when bearing fruit three, 460 long, 80 in diam., not acuminate;

mucro 140 long, 45 broad at base. Fruit borne chiefly on the last division of the leaves, and sporophydia solitary, with few spirals; nucleus brown, with *five* rather prominent angles, 250-260 long, 240-245 broad. Antheridia 170 in diameter, borne on the summit of the last division of the leaf.

The old capsule of the nucleus seems quite persistent, remaining adherent long after the coronula has fallen, and resembling brown parchment-like wings along the spiral angles of the nucleus.

Plant gathered by the Rev. Thos. Morong, on the island of Nantucket, in a very muddy pool, July 21st, 1887.

Plate LXXV., Fig 1.—Plant natural size, with the numerous, crowded, axillary and terminal, contracted, fertile spikes; these fertile spikes generally arise within a verticil of sterile leaves, most of which whorl. 2, a portion of a fertile spike, $\times 25$ diam.; on the lower verticil a leaf is twice divided, bearing on each division four mucronate terminals; on the upper verticil, once divided, with three terminals and fruiting organs. 3, the mucronate extremity of a leaf $\times 50$ diam. 4, a nucleus with five angles $\times 25$ diam.

Bibliographical Notes on well known Plants.—IV.

BY EDWARD L. GREENE.

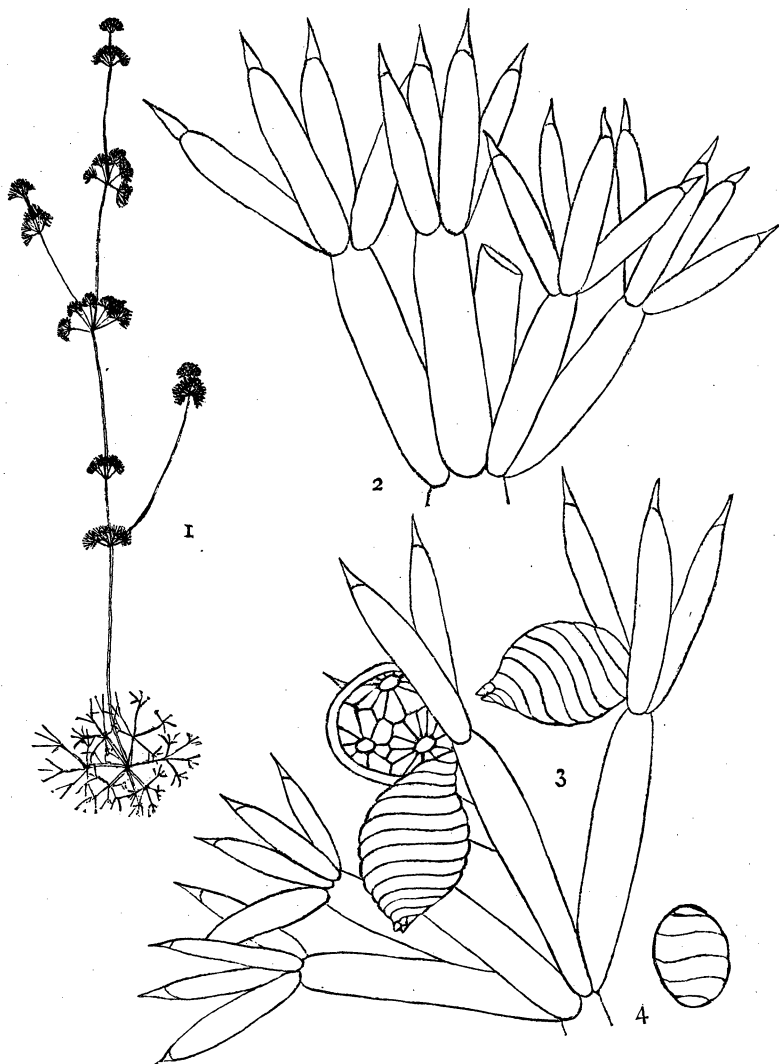
NELUMBO LUTEA, Baillon, Hist. Pl. iii., 79 (1872).

Cyamus luteus, Nutt., Gen. ii., 25 (1818).

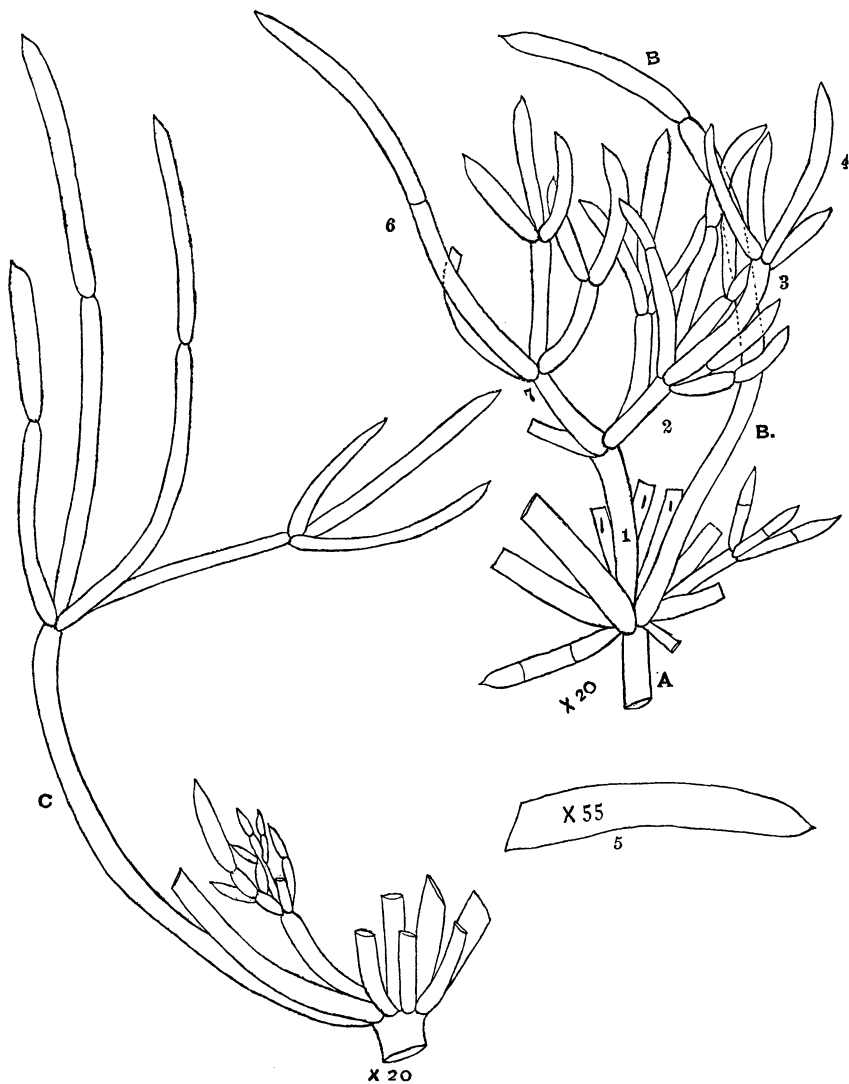
Nelumbium luteum, Willd. Spec. Pl. ii., 1289 (1799).

Nymphæa Nelumbo, var. β . Linn. Spec. Pl. 511 (1753).

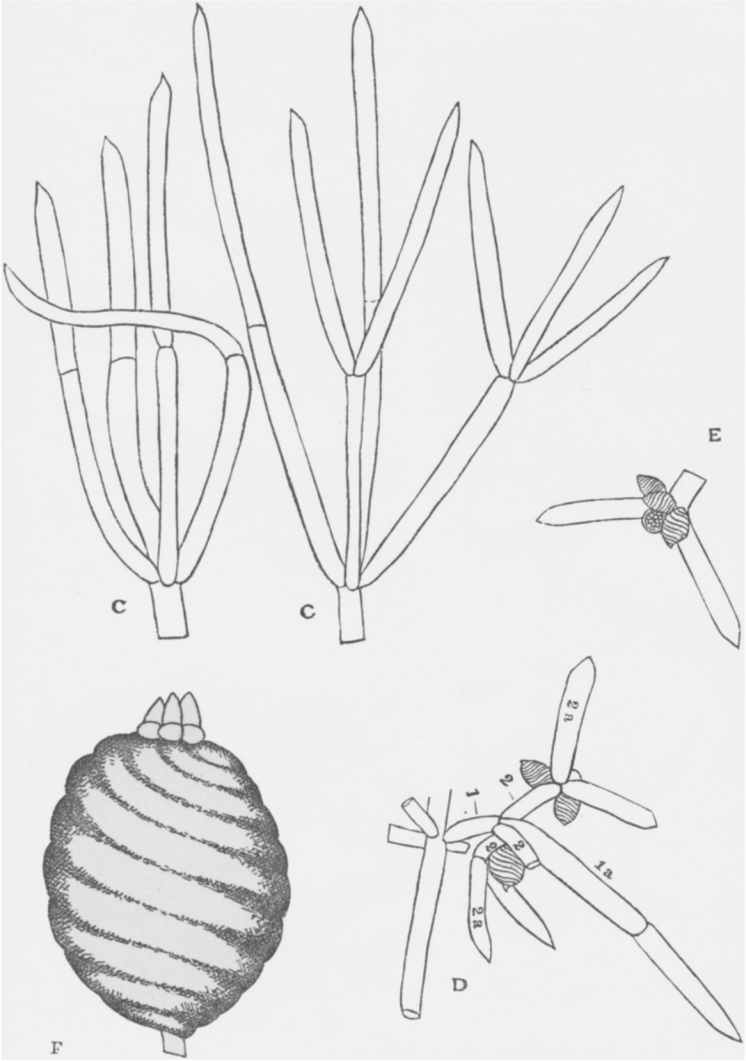
Books on the botany of the Atlantic States which have been written within the last fifty years, have all been perpetuating a Candollean mistake respecting the rightful name of this our grandest water-lily; for *Nelumbium*, so far from being the oldest, is, in truth, the most recent of all, having been invented by Willdenow in 1799. *Cyamus* of Salisbury (1805), later in finding a modern application, is the ancient Greek name of the genus. For twenty years or more after Salisbury took it up, it was adopted, to the suppression of *Nelumbium*, by authors as prominent as Smith, Nuttall and Barton; but the elder De Candolle



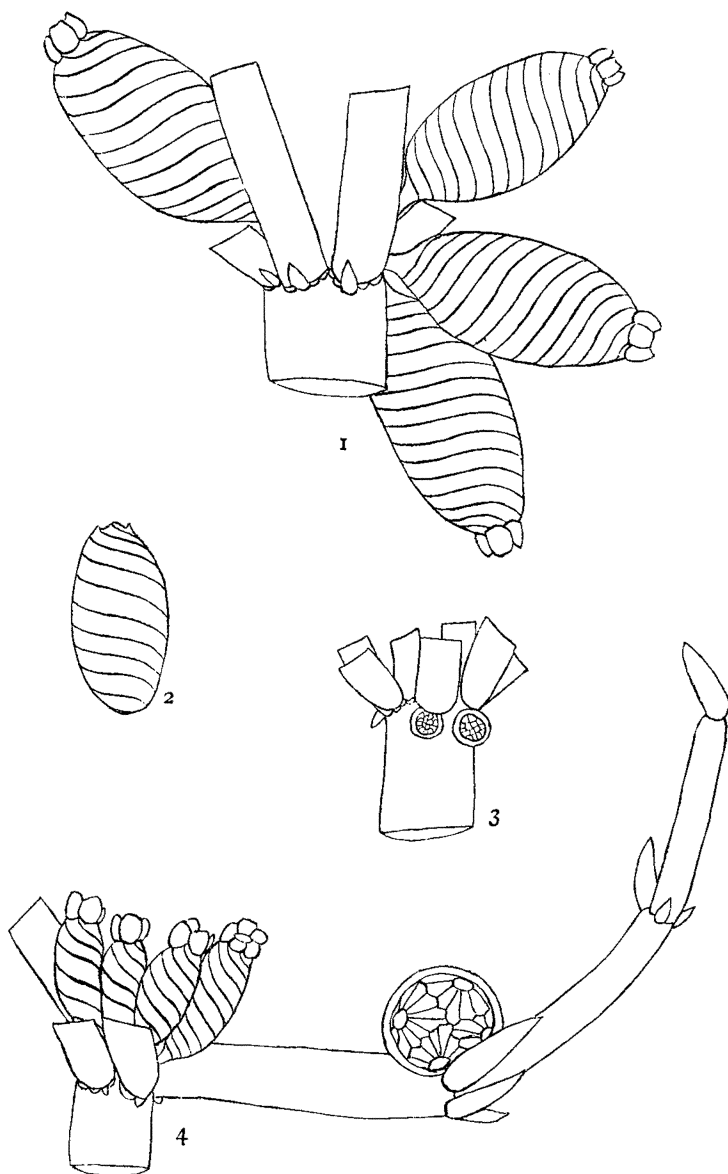
Chara Muthnatæ, Allen, n. sp.



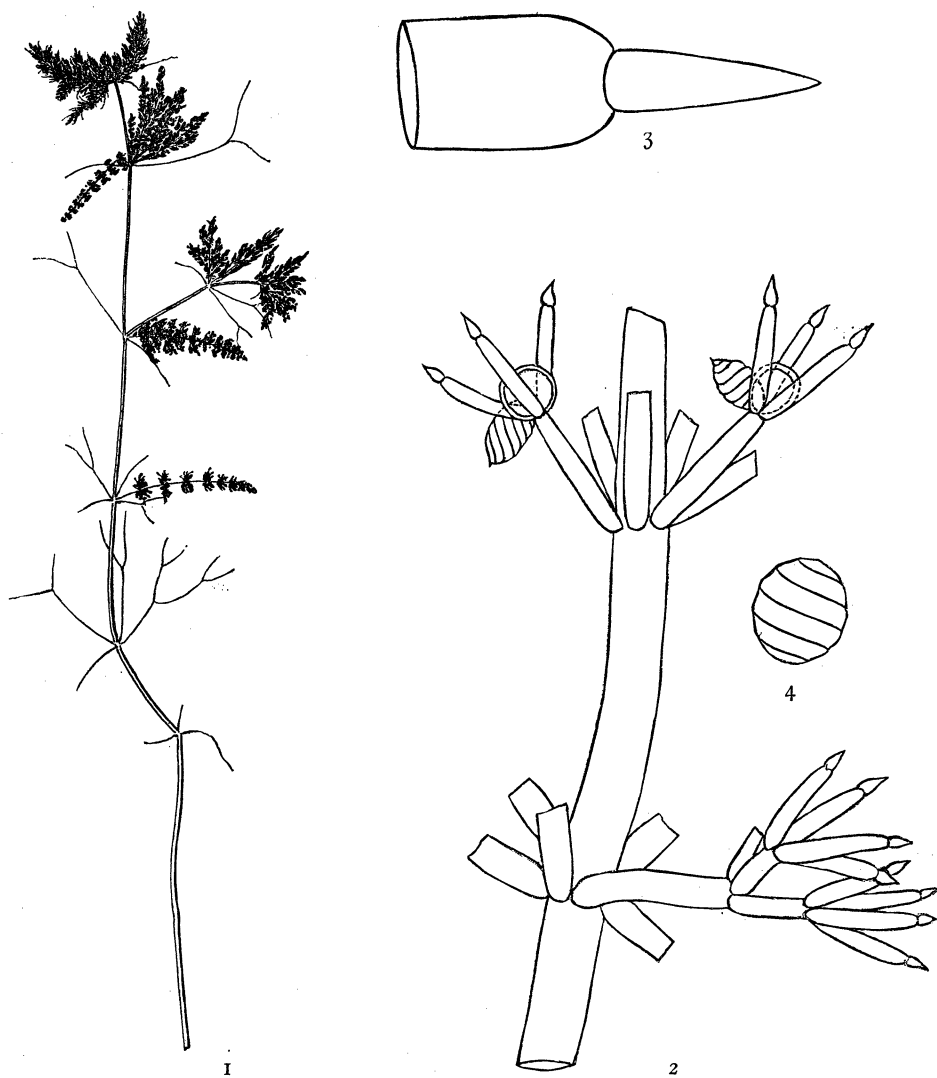
Tolypella Macounii, Allen, n. sp.



Tolypella Macounii, Allen, n. sp.



Chara Succincta, R. Br., from Mauritius.



Nitella Morongii, Allen, n. sp.